

## Nanochemistry and biotechnology

### Effect of aqueous colloidal solution of C<sub>60</sub> fullerene on hematological parameters in rats

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Medical applications potential of C<sub>60</sub> fullerene (C<sub>60</sub>) is mainly associated with anti-tumor and antioxidant activities, as well as with ability to act as a carrier for various therapeutic agents. On the other hand, data about biological safety of C<sub>60</sub> are contradictory, which makes actual the study of it possible negative effects.

The research aim was to investigate the effect of aqueous colloidal solution of unmodified C<sub>60</sub> (C<sub>60</sub>FAS) on the hematological parameters in rats. C<sub>60</sub>FAS was intraperitoneally injected in a dose of 1 mg/kg in concentrations of 34.7 μM (group 1) and 173 μM (group 2). Animals which received water for injections served as controls. The intact rats were used for benchmarking. On the 1<sup>st</sup> and 5<sup>th</sup> days the standard hematological parameters were evaluated using auto hematology analyzer.

An increase of leukocyte number in 1.4 times was observed in group 1 on the 1<sup>st</sup> day. On the 5<sup>th</sup> day the leukocyte number returned to normal value, while mean corpuscular volume (MCV) increased in 1.1 times. Mean corpuscular hemoglobin (MCH) exceeded control value in 1.1 times at all terms. In group 2 the reduction of hemoglobin content in 1.1 times relatively to the norm was observed on the 5<sup>th</sup> day without difference from the control. Hemoglobin content in control did not differ from the norm. On the 5<sup>th</sup> day there was a decrease of the number of red blood cells (RBC) in 1.2 times relatively to the norm without difference from the control. This can be explained by moderate hemolysis, since the values of hematocrit, MCV and mean corpuscular hemoglobin concentration (MCHC) in all groups were not significantly differed. RBC distribution width (RDW-SD) was increased during all observation in group 1 (in 1.2 and 1.3 times on the 1<sup>st</sup> and 5<sup>th</sup> days respectively) as well as in group 2 (in 1.1 and 1.2 times on the 1<sup>st</sup> and 5<sup>th</sup> days respectively).

Thus, the C<sub>60</sub>FAS administration in used concentrations was accompanied by moderate hemolysis, anisocytosis and transient leukocytosis. Wherein, the values of hematological parameters were within the physiological range.